

REMARKS

Claims 1-6 are pending in the application. Claims 1-6 have been rejected under 35 U.S.C. § 112, first paragraph, claim 5 has been rejected under 35 U.S.C. § 112, second paragraph, and claims 1-6 have further been rejected under 35 U.S.C. § 103(a).

Preliminary Matters

As a preliminary matter, Applicant has amended the Abstract so that it better conforms to MPEP § 608.01(b) guidelines.

In addition, Applicant thanks the Examiner for acknowledging the claim to foreign priority and the receipt of priority papers.

Applicant submits herewith corrected formal drawings in which Figure 9 has been labeled "PRIOR ART", as requested by the Examiner.

The Examiner has objected to claims 1-6 due to a minor informality. Applicant submits that the amendment made to claim 1 overcomes the objection. Such amendment is merely to correct a minor error, is not made in response to a prior art rejection, and does not narrow the scope of the claim. In addition, Applicant has corrected a minor error concerning the magnetic sensor, that was made to claim 1 in the Preliminary Amendment submitted on January 3, 2002.

Rejections under 35 U.S.C. § 112, first paragraph

Claims 1-6 have been rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to make or use the invention. For example, the Examiner maintains that on page 12, in

the first full paragraph, Applicant has not provided a specific example of materials and mixing ratios to obtain an encoder having the claimed properties.

However, specific examples of materials are disclosed on page 11, the first full paragraph. In addition, as stated in the first paragraph on page 4, and in the first full paragraph of page 12, the mixing ratio is described as a ratio that will obtain the disclosed single pitch deviation and magnetic flux density characteristics. Such characteristics are recited on page 11, the fourth full paragraph, and in claim 1. Accordingly, Applicant submits that one skilled in the art would be able to achieve the appropriate mixing ratio to obtain the disclosed characteristics by using the recited materials.

Rejection under 35 U.S.C. § 112, second paragraph

Claim 5 has been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicant has amended claim 5 in accordance with the Examiner's suggestion and submits that such amendment overcomes the rejection.

Rejections under 35 U.S.C. § 103(a)

Turning to the art rejections, claims 1-6 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,622,437 to Alff ("Alff") in view of U.S. Patent No. 5,431,413 to Hajzler ("Hajzler").

The Examiner maintains that the combination of Alff and Hajzler suggest claim 1. However, Applicant submits that claim 1 is patentable over the cited reference. For example,

claim 1 recites that a magnetized encoder is mounted on one of an inner and outer member, which serves as a rotary member. The magnetized encoder includes an elastic member made of a base material mixed with a powder of magnetic material. In a thermal endurance test condition, the magnetized encoder is subjected to 1,000 thermal cycles, each consisting of heating at 120°C for one hour, followed by cooling at -40°C for one hour. Under the thermal endurance test condition, the magnetized encoder retains the following initial magnetic characteristics when measured at a point 2.0 mm distant from a magnetized sensor: single pitch deviation: $\pm 2\%$ or less and magnetic flux density: ± 3 mT or higher.

The Examiner maintains that the magnetized encoder of claim 1 is shown by encoder 7 of Alff, in view of the materials disclosed in Hajzler. In particular, Hajzler is incorporated into Alff to suggest that a magnetized encoder can be made of an elastomer material and magnetic particles (col. 2, lines 6-9). The Examiner then acknowledges that Alff does not disclose that encoder 7 has the claimed properties when subject to the claimed thermal endurance test. However, the Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to obtain the claimed properties by adjusting the mixing ratio of elastomer material and magnetic particles disclosed in Hajzler.

Applicant respectfully disagrees with the Examiner for the following reasons. First, not only does Alff fail to disclose the claimed magnetic characteristics (single pitch deviation $\pm 2\%$ or less and magnetic flux density ± 3 mT or higher), it also fails to teach or suggest the claimed endurance test. In his statements, it appears that the Examiner assumes that Alff is subjected to

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the claimed endurance test, however, no such test is disclosed in the reference. Second, Alff fails to suggest that sensor 8 is positioned at a point 2.0 mm from encoder 7.

Applicant submits that the above arguments suggest the Examiner is using impermissible hindsight in maintaining his rejections. Hindsight has repeatedly been held to be improper and ineffective in supporting an argument of *prima facie* obviousness. See, e.g., *In re Fritch*, 23 USPQ2d 1780 (Fed. Cir. 1992); *In re Bond*, 15 USPQ2d 1556 (Fed. Cir. 1990); *In re Laskowski*, 10 USPQ2d 1397 (Fed. Cir. 1989).

Accordingly, since Alff fails to teach or suggest every feature recited in claim 1, and Hajzler fails to cure the deficient teachings of Alff, Applicant submits that claim 1 is patentable over the cited references.

Since claims 2-6 are dependent upon claim 1, Applicant submits that such claims are patentable at least based on their dependency.

Newly Added Claims

Applicant has added claims 7-9 to provide more varied protection for the present invention. Applicant submits that such claims contain features which are not taught or disclosed in the cited references.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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Respectfully submitted,

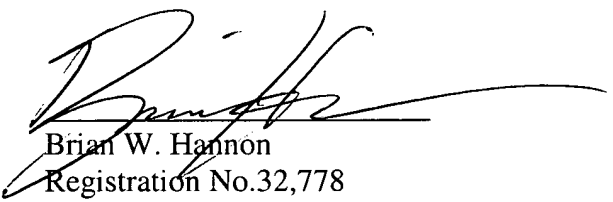
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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1. (Twice Amended) A wheel bearing assembly which comprises:
 - an inner member;
 - an outer member;
 - at least one circumferential row of rolling elements rollingly interposed between the inner and outer members;
 - a sealing device for sealing an annular end space defined between the inner and outer members; and
 - a magnetized encoder mounted on one of the inner and outer members which serves as a rotary member and including an elastic member made of a base material mixed with a powder of magnetic material, said elastic member being bonded by vulcanization to the magnetized encoder and having a series of alternating magnetic poles of opposite polarities formed in a direction circumferentially of the rotary member;
- wherein under a thermal endurance test condition in which the magnetized encoder is subjected to 1,000 thermal cycles each consisting of heating at 120°C for one

hour followed by cooling at -40°C for one hour, the magnetized encoder retains the following initial magnetic characteristics when measured at a point 2.0 mm distant from [the magnetized encoder] a magnetic sensor: [:]

Single pitch deviation: $\pm 2\%$ or less and

Magnetic flux density: ± 3 mT or higher.

5. (Once Amended) The wheel bearing assembly as claimed in Claim 3, wherein the sealing device includes first and second annular sealing plates fitted to members of the inner and outer members that are different from each other;

wherein said first and second annular sealing plates are of a generally L-shaped section each including a cylindrical portion and a radial upright portion and confront with each other, wherein the first sealing plate is mounted on one of the inner and outer members which serves as the rotary member with the radial upright portion thereof positioned on an outer side of the bearing assembly;

wherein said elastic member mixed with the powder of the magnetic material is bonded by vulcanization to the radial upright portion of the first sealing plate and has the alternating magnetic poles of the opposite polarities defined therein in the direction circumferentially thereof;

wherein the second sealing plate is provided with a side lip slidingly engaged with the radial upright portion of the [second]first sealing plate and a radial lip slidingly engaged with the cylindrical portion of the [second]first sealing plate; and

wherein the radial upright portion of the first sealing plate has a radial outer edge spaced the slight distance radially from the cylindrical portion of the second sealing plate.

Claims 7-9 are added as new claims.

IN THE ABSTRACT OF DISCLOSURE:

The abstract is changed as follows:

Provided is a wheel bearing assembly in which a magnetized encoder [(20)] can withstand severe temperature condition occurring around a vehicle wheel to thereby secure a high accuracy of detection of a rotational speed. The wheel bearing assembly includes a sealing device [(5)] interposed between inner and outer members [(1 and 2)]. A rotary member which is defined by one of the inner and outer members [(1 and 2)] is provided with a magnetized encoder [(20)] having a series of alternating magnetic poles of opposite polarities. The magnetized encoder [(20)] constitutes the sealing device [(5)]. The magnetized encoder [(20)] can maintain initial magnetic characteristics as regards the single pitch deviation and the magnetic flux density under predetermined thermal endurance test condition.